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CHAIRMAN'S ADDRESS



Cost engineering has recently had an increased visibility. With the age of austerity, the costs of projects, systems and services have come more into focus. Cost

engineers have technical background; they are not accountants. For cost engineers, their focus is not watts, newtons, volts, amps or kilograms, but dollars, euros and pounds.

They have a number of purposes to their work; cost predictions are not the end in itself. It is always necessary to consider the answer to the question, "What is the requirement?" Potential applications of cost engineering include, but not limited to:

- Financial analysis (for example affordability, budgeting)
- Economic analysis (for example options analysis)
- Cost benefit analysis (for example)
- Business case analysis (for example due diligence of capital expenditure)
- Project management and project control (for example setting EVM baseline)
- Design and performance trade-off decisions (for example analysis of alternative)
- Acquisition analysis (for example technology insertion)

It is not commonly appreciated that there are a number of different types of cost prediction which can be deployed which are suitable to different applications including:

- Rough Order of Magnitude (ROM) cost
- Independent Cost Estimate (ICE)
- Whole life cost (WLC) or Life Cycle Cost Estimate (LCCE)

- Budgetary cost estimate
- Commercially committing proposal estimate
- Discounted cash flow and net present value (NPV)
- Parametric top down forecast
- Should cost / Would cost / Could cost
- Operating & support cost or through life cost (TLC)
- Activity-based costing (ABC)

To achieve these cost predictions a cost engineer needs a host of competencies as shown in red line on the tube map (*see overleaf*).

It takes experience, knowledge and understanding to produce an estimate that is justified and credible. It takes science, maths and art to communicate an estimate that will withstand scrutiny!

Our next SCAF workshop will be on the theme of "The Impact of Brexit on the Costing Community" at the RINA venue in London. Come and join us, you may learn something new or contribute to the learning of the less experienced by networking!

Dale Shermon

SCAF Chairman

2017 SCAF Calendar of Events

07 Feb 2017

The Impact of Brexit on the Costing Community, RINA, London

Since June the financial markets have reacted negatively in the immediate aftermath of the results with investors in worldwide stock markets losing heavily. How do events like this effect your cost forecasts? Are there any new risks or opportunities to consider? What additional currency hedging may be necessary? This workshop will consider what, if anything, is the impact of Brexit on the cost community. **Registration open.**

04 Apr 2017

2017 SCAF Challenge & Training Workshop, BAWA, Bristol

The aim of this workshop is to provide an interactive training session in cost estimating through the presentation of case studies that have been conducted by professional teams from academia, industry and consultants with the added benefit of top-level critique by senior figures in the profession. The programme will be instructive, entertaining and suitable for a wide interest audience (estimators as well as managers). **Participating teams invited.**

13 Jun 2017

Costing Profession: Recruitment, Retention and Development, Ribby Hall, Preston

Hear from experts on the benefits in joining the profession and learning the skills necessary for a successful career in cost estimating and forecasting, business analysis and commercial practice. Our speakers will include staff from industry, recruitment agencies and academia. **Papers invited – please contact the Secretary.**

06 Jul 2017

Summer Reception and Awards Banquet, Bailbrook House Hotel, Bath

This event will provide members and their partners with a chance to meet up with friends and colleagues and gave us the opportunity to recognise and award members for their contributions to the Society over the year.

12 Sep 2017

Annual Conference, The QEII Conference Centre, Westminster, London

We return a second time to this prestigious venue in London and the theme for this year's conference is "Achieving Value for Money: is partnering the solution". Our speakers will include members of regulatory bodies, industry partners, strategic supportability experts and academia. **Papers invited –please contact the Secretary**

14 Nov 2017

Vendor Day and Service Providers Day, BAWA, Bristol

An opportunity for costing professionals, business analysts, commercial and project managers to see the latest products and services from vendors and service providers. Exhibition stands will be displayed with a section of the room set-aside for simultaneous small group presentations throughout the day. **Organisations invited – contact Secretary.**

Expectations, Realisation and Divorce: Excerpts on the EU

Arthur Griffiths



On the 15th September 1992 SCAF held a conference with a theme entitled “The Turning Point: forecasting the consequences for Britain”. The speakers included:

- **Dr C Coulson-Thomas**, on behalf of the European Commission – *‘Internationalisation and the Global Company’*
- **Mr D P Shark**, Embassy of the United States, London – *‘An Outsider’s View’*
- **Mr C Moir**, Senior Economic Advisor, UK Dept of Trade and Industry – *‘Economic Consequences of 1992’*
- **Mr S White**, Director of Procurement Policy, UK Ministry of Defence – *‘Procurement Policy Decisions for the MoD’*
- **Mr J MacNaughton**, EDS-Scicon – *‘An Industry View “1992” – The Turning Point - the consequences for Great Britain*

The focus of the papers and presentations was to review the effects on Britain following the signing of the Maastricht Treaty (1992) and its implementation in January 1993 which, created the European Union.

To put this into context, by 1992 the UK had already been part of the European Community by some 20 years. Cost estimators working on international programmes were already familiar with the requirement to report cost estimates and financial forecasts not just in pounds sterling but also in ECU’s (an ECU had no specific value but was used as the ‘Unit of Account’ of the European Community before being replaced by the Euro in January 1999).

The ECU was part of the European Exchange Rate Mechanism (ERM) which was developed as an attempt to minimise fluctuations between member state currencies and the singular ECU. When the ERM was set up in 1979 the UK declined to join, but much later, the UK government began to admire the low inflationary record of West Germany and the strength of the Deutsche Mark. UK inflation at the time (15%) was three (3) times the rate of Germany’s interest rate. The UK joined the ERM in 1990 to follow an economic and monetary policy preventing the exchange rate between the pound sterling and other member currencies from fluctuating by more than 6%.

For the cost analyst/estimator at the time, the requirement to provide cost estimates in pounds sterling and ECU’s was seen as an additional burden. However, when combined and held within the ERM structure the extra effort of cost forecasting with individual exchange rates was reduced.

Expectation

Returning to the papers of 1992, there was a huge amount of optimism from the speed of privatisation and the impact of de-regulation, barriers were tumbling and markets becoming more open. However, for many companies ‘internationalisation’ remained little more than a phrase or slogan. Pan-European recruitment was more talked about than practical. People and other resources were too often ‘imprisoned’ in mini-bureaucracies of national operating companies.

The United States supported European integration as they saw Europe as an important force for world peace and economic growth. It was noted at the time that the creation of a border-free Europe held great promise for fostering economic growth and facilitating access to the whole European market.

The 1992 Treaty defined the free movement of people, goods, services and capital across the whole of the community. The implementation was aimed at removing barriers which impeded these four freedoms.

All-in-all, the papers were optimistic with expectations of good economic growth in the future.

One paper however stood out and that was 'A Industry View' presented by **Mr J MacNaughton**. He recognised that attention had been diverted from economic to political unity. The objective of '1992' was to create an internal market within the community nations thereby strengthening the European industrial base and making Europe competitive worldwide.

MacNaughton went on to state that such a concept would require rationalisation of the European industrial base. Instead of two or three competing companies in each of the twelve (12) community nations there would be two or three competing companies within the European community.

MacNaughton also noted that UK companies that had been and were positioning themselves in preparation for 1993 (implementation of the EU) were limited in number. An important point to note was that companies waiting for the 1st January 1993 deadline before doing anything about the future had already missed the first train or – to mix metaphors – they would find that the early birds had commandeered the best worms.

I like many others left the 1992 Conference feeling very upbeat about the future and our profession would not overburdened through new regulations and control.

The following morning however became major hangover day.....Black Wednesday had arrived. The government was forced to withdraw the pound sterling from the ERM after it was unable to keep the pound above its agreed lower limit. De-valuation and re-calculations of cost estimates and forecasts on international programmes followed.

Realisation

It was never the intent of the 1992 Conference to attempt to forecast too far into the future other than identify some of the risks and uncertainties known at the time. There have been many changes over the years most notably were:

Social: Many UK citizens are now working and living in Europe. Many more European citizens are living and working in the UK showing that integration works.

Industry: Whichever way you look at it – the UK lost much of its manufacturing base to Europe. UK infrastructure is either owned or operated by European companies. High end procurement and development is done with European and International partners. Numerous company mergers occurred – competition was affected.

Finance: Economic growth across the community and within the UK was not as large as expected. The financial services sector is dominated in London. At present European financial services providers cannot compete on the same scale.

Divorce

It is always difficult to pick a point in time or a trigger to determine when something like a major shift occurred. One of the issues could have been the expansion of the community. In 1951 at the Paris Treaty the whole European idea was agreed between six nations (Belgium, France, Germany, Italy, Luxembourg and Netherlands). In 1973 three other nations joined (Denmark, Ireland and the UK). Greece joined in 1981 and then Spain and Portugal in 1986 making it a 12 member nation community. Expansion had been gradual and in 1995 Austria, Finland and Sweden joined. 1995 also saw the Schengen Agreement come into force.

In 2004 there was, what can only be described as a sea change. Twelve (12) new nations joined the European community nearly doubling the existing number of nations – no more gradual expansion - more like a huge surge. A further two nations joined in 2007 to make a total now of 27 member nations.

Over the intervening years 1951 – 2009 a number of treaties were signed and implemented each handing over greater incremental political control to the European Parliament. The 2009 Treaty of Lisbon was significant in terms of really establishing European unilateral regulation for the future together with a strengthening of social movement through the Schengen Agreement.

Consequences for the Costing Community

This is the topic for our workshop in February 2017 so it will be interesting to hear what the speakers have to say. Reporting and analysing the effects of foreign exchange is no longer a big issue – but uncertainty and risk will undoubtedly play a much bigger part as much of the raw materials and components are now imported and could be subject to a number of different trade tariffs.

But whenever there is a down-side there is always someone, somewhere on the gain chain. In 1992 many city traders recognised that due to increasing downward pressure on the pound, the UK might not be able to hold on to the ERM policy for very long. These traders started to short sell pound sterling in very large quantities. This further added to the downward pressure on the pound. Traders who had made short selling bets on the pound (1992) profited in huge amounts including one reported to have made over £1Bn profit.

In 2016 the UK voted to leave the EU. Since then the value of the pound has decreased significantly and the stock market share price has increased dramatically.

Is history repeating itself

All the papers referred to in this article (15th September 1992 Conference) can be found on the SCAF website www.scaf.org.uk/library archive

Arthur Griffiths

SCAF Newsletter Editor

Report on SCAF Workshop

Theme: Integrated Cost and Schedule Risk Analysis

November 2016

BAWA Centre, Bristol

As projects become more complex and costly, the requirement to quantify the risks and uncertainties associated with cost and schedule has grown, as has the availability of computerised risk analysis techniques. Whilst cost and schedule are often assessed separately, there are advantages to using an integrated approach when it comes to risk analysis. In particular, cost risk can be more accurately estimated and understood if it explicitly takes into consideration schedule risk. This workshop was organised to examine methods of incorporating the risk and uncertainty in cost and schedule to determine equivalence between schedule and costs and provide application examples of the technique.

The first speaker was **Ian McPherson** from the Single Source Regulations Office (SSRO), talking on ***“Risk Analysis in Single Source Defence Acquisition Programmes”***. Around 50% of MOD spending is non-competed, much higher than most other comparable nations. Ian explained how the SSRO carried out its key function of price control, using a formula which takes account of price risk in two ways. Firstly, risk that can be measured is included as an allowable cost; secondly, a price risk adjustment is used to account for risk that cannot be measured. The SSRO plans to hold a number of workshops next year with MOD and Industry (involving SCAF) to get a better understanding of what the real risks are for different types of project.

Next, **Andy Banks** from Cost Assurance and Analysis Service (CAAS) provided the audience with an overview of a collaborative NATO study involving 8 nations (Canada, Czech Rep, Germany, Norway, Sweden, Turkey, UK and USA) on ***“Risk Analysis for Acquisition Programs”***. The report, due out in 2017, will set out a range of risk analysis techniques that can be used for the different phases of acquisition. His colleague, Andy Bundock, discussed a couple of the chapters in more detail, starting with two schedule risk methods: a UK bottom-up approach which uses Monte-Carlo on an analysis schedule; and a US top-down approach based on historic data supplemented by SME judgement. Andy ended with three alternative methods for integrated cost & schedule risk analysis: Sequential (schedule analysis feeding into cost analysis); Spreadsheet based (a cost model with a high level schedule bolted on); and Schedule based (an analysis schedule with costs allocated to activities).

Completing the morning session, **Richard Cousins** from QinetiQ gave a lively presentation on ***“Combined modelling of cost-schedule uncertainty and risk: Improving your chances”***. Richard used a series of simple diagrams to demonstrate the fundamentals of analysing risk and uncertainty for cost and schedule with Monte Carlo simulation. This provided the groundwork for the second half of his talk in which he explained, using simulation results, why setting your target at 50% for cost and schedule separately would result in a probability of failure well above 50%. To improve your chances, you should use the joint confidence level (JCL), which takes both cost and schedule into account; for example, NASA uses the 70% JCL for cost and schedule baselines.

After lunch, **Doug Oldfield** of Palisade Europe continued the simulation theme in his presentation entitled ***“What are the chances of that? Quantification with Monte Carlo simulation”***. Having explained the origins of the term Monte Carlo (it was first used as a code word for the simulation of radiation effects by nuclear physicists at the end of WWII), Doug described how Monte Carlo simulation works, starting with a simple cost model then adding uncertainty and risk. He then gave a live demonstration, showing how to combine cost and schedule by importing an MS Project file into Excel and using Monte Carlo to carry out an integrated analysis.

Duarte Rodrigues from Cranfield University then discussed his PhD Research, ***“An innovative framework to optimise cost and availability estimates for support contracts bids”***, which is focused on optimising estimates at the bid stage, for example in the context of contracting for availability. Duarte outlined the framework, based on a historic database of analogous projects, and then went on to demonstrate the tool he has developed to implement this method. This uses a genetic algorithm to find an optimal solution across multiple objectives (cost, availability and contract duration). He is currently at the validation stage, and is looking to work with further industry partners to extend the validation of the modelling process and outputs.

Following the tea break, **Darda McDonagh** of RiskHive provided a change of emphasis, focusing on the human and emotional aspects of risk analysis associated with **“Rebuilding Christchurch”**. In 2010-11, a series of earthquakes and tremors resulted in widespread structural damage and loss of life in Christchurch, NZ. After describing some of the impacts, Darda went on to talk about how Christchurch is being rebuilt, in particular a series of landmark developments known as Anchor projects. Due to the significant level of community involvement, there was a need to find new ways to explain risk analysis. Darda explained how an innovative approach was used to provide a range of graphical visualisations, including bowties, word clouds, risk radar reports and landscape exposure charts.

The final speaker was **Lucia Retter** from RAND Europe, who reported on the mitigation strategies adopted by several countries to control inter-generational cost increases in her talk, **“Controlling cost escalation: an international comparison”**. Having outlined some of the impacts of cost escalation, Lucia went on to describe how the approaches adopted are related to size of budget. Whilst the US has focused on acquisition reform, maintaining full spectrum capability in onshore manufacturing, smaller nations are increasingly using off-the-shelf procurement and consequent specialisation. The UK is an intermediate case; retaining operational sovereignty with a limited onshore supply chain has led to a very high proportion of non-competed work (neatly taking us back to the first presentation of the day).

Dr Crispin Allard

Principal Consultant - Decision Support
Aerospace, Defence, Security & Technology

ATKINS

Report on the International Training Symposium

17-20th October 2016

The Marriott City Centre Hotel, Bristol

The origins of the Society for Cost Analysis and Forecasting (SCAF) are linked to the International Society of Parametric Analysis (ISPA) and latterly the International Cost Estimating and Analysis Association (ICEAA). It is for this reason that the SCAF committee agreed to ICEAA’s request to join them this year for a joint conference. In November the committee usually plan for a conference and annual general meeting (AGM) to report to members the activities of the previous year and re-establish the committee for the forthcoming year. But we decided to cancel the event and join ICEAA for a combined training symposium from the 17 to 20 October at the Marriott Bristol city centre.

As 2016 is a leap year it was time for ICEAA to leave America and head for Europe; this time it was time to visit the United Kingdom as the highest population of ICEAA certified members are located in the south west, in Bristol due to the proximity of MoD Abbey Wood, the headquarters of the cost assurance and analysis service (CAAS). Four year previously, the conference had been very successful in Brussels so there were high expectations of this conference/training symposium.



Many months of planning had prepared the joint conference bringing together a number of organisations including Society for Cost Analysis and Forecasting (SCAF), Association of Cost Engineers (ACostE), Space Systems Cost Analysis Group (SSCAG), Association of Project Management (APM), Dutch Association of Cost Engineers (DACE), NESMA and International Function Point Users Group (IFGUP). Jason Dechoretz, Andy Langridge, Peter Braxton, Sherry Stukes and Megan Jones were amongst the organisers that worked hard behind the scenes arranging sponsorships, organising training, judging papers and presentations before Paul Marston declared the conference open!



The event was well attended with more than 109 people signing up for the training symposium. They had a mixture of backgrounds from industry, government, consulting and academia. It was a truly international conference with representatives from eleven different countries including Australia, China, Germany, Canada, France, USA, Belgium, Greece, Denmark, Netherlands and UK.

The reception and registration on Monday 17 October was a relaxed atmosphere and gave those attending the opportunity to network and register before the busy training symposium. People circulated and caught up with old friends and colleagues.

Following full English breakfast on Tuesday 18 October the training symposium started formally and Dr Tim Sheldon from UK MOD gave a stimulating keynote talk that framed the event and inspired the audience. During the next three days of the symposium



there were two technical tracks, a training track and sponsors showcase running on each day; a difficult decision was required to decide which to attend.

The symposium had a second keynote speaker on Tuesday on the topic of “Blazing the project controls skills trail” from Shane Forth from Costain and Catherine Lambert of the Engineering Construction Industry Training Board (ECITB).



The technical tracks considered topics such as Management, Models & Methods, Space Systems, Software, Risk analysis and finally Government perspective. There were a total of 36 different technical presentations. The training track was a selection of sessions taught from the ICEAA CBoK and proved very popular; there was an opportunity to take the ICEAA professional and certified exams on the Friday for those with stamina.

The sponsor showcase provided the generous sponsors with an opportunity to demonstrate and present their capabilities. We were grateful for sponsorship from gold sponsors; QinetiQ, PRICE Systems, and silver sponsors Galorath, Palisade, 4cost and MCR.



Wednesday commenced with a thought provoking keynote presentation by Michael Lionais from the Canadian Treasury Board Secretariat. Mike asked the audience to consider the means of presenting their costs to provide recipients of cost information with an easier decision. Also on Wednesday during the plenary session Andy Prince took the time to explain the review process and judging of the best presentation and paper for the conference. With 36 technical presentations and a similar number of associated papers this was a substantial process and Sherry Stukes had a number of volunteers who has offered both their time and support.

Best Presentation winner was Alan Jones for a comprehensive presentation titled “Outing the outliers” dealing with numerous methods of dealing with outliers in a dataset. When it came to the best paper, Andy explained that there was a draw for first place which recognised the high standard of the papers being reviewed. After a second round of consideration it was agreed by the judges to award Best Paper – Honourable mention to Steve Sterk and Anthony Olquin for their paper titled “NASA’s X-plane database and parametric cost model”.



This left a tie for best paper therefore two awards were made to:

1. Alain Abran, Charles Symons, Christof Ebert, Frank Vogelezang, Hassan Soubra for “Measurement of software size: contributions of COSMIC to estimation improvements”
2. Christian Smart for “The Signal and the Noise in Cost Estimating”



Finally, on Thursday the scheduled keynote speaker was unable to attend, but Andy Prince from NASA stepped in with a fascinating keynote on the economics of the space shuttle programme.

The exams on the Friday brought another European ICEAA training symposium to a scheduled end. Attendees had made new friends, renewed old friendships, learnt a lot and laughed a lot. It was a great success and all those involved in the organisation that I have mentioned in this article, and those I have forgotten (apologies!), should be proud of arranging a great event and inspiring the international costing community further in terms of training, skills and capability.



Dale Sherman
SCAF Chairman



HMS Ocean Replacement: a subject for a reality check

Brain Tanner



The December 2016 issue of “Warships International Fleet Review” contained an article promoting the case for the replacement of HMS Ocean. The costs contained in the article are somewhat understated.

It stated a ‘cost of around £150 million’, which is indeed the original contract price, and suggested that a replacement would cost £300M in today’s prices. This does however overlook various factors as reported in the National Audit Office 1993 report ‘Ministry of

Defence: The Award of the Contract for the Landing Platform for Helicopters’:

- (i) The tendered price ‘was due to VSEL’s decision to take the risk of having to support the bid from reserves’ (para 4.48).
- (ii) The Swan Hunter Shipbuilders’ final offer was £210.6M (para. 4.43).
- (iii) The actual contract price of £143.9M (para 4.71) based on the tendered price of £139.5M and the inclusion of some costed options.
- (iv) Reduced accommodation standards etc. (para 2.11).

Some commercial equipment fitted on build had to be replaced early in the ship’s operational life, known examples being air compressors and LCVP davits.

Price does not necessarily reflect the cost of construction and the true cost of HMS Ocean can never be fully known as the cost to Kvaerner Govan Ltd has never been revealed by the parent company. In some quarters the opinion is that the Swan Hunter Shipbuilders final tendered price is a better indication of cost given the company’s parlous financial situation due to losses on the build of the RRS James Clark Ross.

The tendered price of £210.6M at 1993 Economic Conditions (ECs) when inflated to 2015 ECs is £321.5M. But Real Cost Growth (RCG) is a factor in all defence equipment, the annual increase varying across equipment types. RAND in their 2006 report ‘Why Has The Cost of Navy Ships Risen’ examined various factors influencing the rising cost of naval ship types over the period 1950 to 2000. For naval amphibious ships the Customer Driven Factors, i.e. RCG, contributed a real cost growth of 4.2% per annum. Analysis beyond 2000 was difficult because of few new classes of ship types but what analysis was possible showed a significant reduction in the RCG factor to 2.2% per annum probably due to the end of the Cold War.

Conversely, using the construction cost figures for the Fearless class and successor Albion class produces a RCG of 1% per annum. The RCG factor for RFAs, based on a larger dataset, is 1.6% per annum and is probably a more justifiable figure.

Using these factors produces construction costs for replacement of HMS Ocean of some £465M to £520M. So which is the more appropriate figure? I would suggest the latter to ensure provision for specified accommodation standards etc. These figures exclude any GFX (Government Furnished Equipment, Facilities, Information and Supplies).

But this figure ignores the change in role of HMS Ocean and the considerable enhancements the ship has undergone in service. One public domain description of the 2007 refit stated:

Work undertaken has included extensive improvements in crew accommodation including fitting toilets and bathrooms, provision of mess-decks in Royal Marines' or soldiers' accommodation, storage for their equipment and an entirely refurbished and reconfigured galley (dining area) and improved food storage areas; and equipping the ship with advanced communications facilities and a better weapon defence system, as well as an upgrade to the ship's aviation support facilities to improve support to helicopter operations including the Apache attack helicopter.

And in a 2012 refit the ship received further upgrades:

Defensive upgrades include the new Type 997 "Artisan" Medium Range Radar system; 4 automated 30mm cannons and 20 km of accompanying power and control cabling to replace existing 20mm manned guns, and complement the ship's 3 MK15 Phalanx advanced 20mm close-in weapon systems; a new fire detection system; the new multi-service Defence Information Infrastructure (Future) (DII(F)) communications system; and the DNA(2) Command System.

Mechanical and crew improvements include a first-of-class ballast water treatment system, and a first-of-class Membrane Bio-Reactor (MBR) system to treat waste water and sewage. To ensure compatibility with environmental legislation and permit discharge at sea.



This picture shows a 30mm DS30M Mark 2 Automated Small Calibre Gun installation on HMS Ocean.

It is always useful to draw comparisons whenever able. In this case it is the three Batiments de Projection et Commandement (BPC) (Projection and Command Vessels/ LHD) of the Mistral class. The ships were designed using commercial standards and partially constructed in a commercial shipyard. The first two were ordered from DCN ("Direction des Constructions Navales") in July 2001 with the forward half of the ship constructed by Chantiers de l'Atlantique at Saint-Nazaire. The procurement was whole ship and the budget/ contract did not include new landing craft.



Various costs are given in French Senat budget statements but in 2002 the BPC budget was stated as 614 M€ with a unit price of 278 M€ suggesting a design/ first of class factor of 20% which is not extraordinary. Another statement in 2005 gave a unit cost of 308 M€. At 2015 ECs these costs are £325M for first of class and £270M and £280M respectively.

In 2009 a third ship of the class was ordered from the Saint Nazaire shipyard at a price of 437.5 M€, £370M at 2015 ECs. The order was advanced to provide production employment

at the shipyard so the higher cost might have been due to significant overheads together with reported redesign activity to update the design for equipment replaced due to obsolescence and some technical changes made to reflect the in-service experience of the first two.

Applying the RCG factors for 1999 to 2015 to the first of class cost of £325M produces a cost range of £375M to £450M. Applying the same factors to later cost of £370M on the assumption that significant changes were not introduced produces a cost range of £430M to £525M.

In July 2015 Fincantieri received an order for a Unita Anfibia Multiruolo (LHD) of similar size to HMS Ocean, the reported shipbuilding cost being 853M€, £685M. Included in the contract is logistic services and in-service maintenance support for the first ten years of the vessel's lifecycle. Nothing can be found relating to the build standard of the ship, but it is being constructed at the Castellammare di Stabia shipyard near Naples which is currently building the bow section of the Logistic Support Ship for the Italian navy.

So what price an HMS Ocean replacement? A decade or so ago to inform future planning there was a MoD funded concept study of an LHD to replace HMS Ocean. Nothing more has been seen but the concept study resulted in a vessel significantly larger than HMS Ocean. A starting figure of £500M seems appropriate; for a doubling in size (volume/gross tonnage) and assuming Chilton's Law suggests a price of £800M, somewhat more than the £300M the article (Dec 2016 issue of "Warships International Fleet Review") suggested.

Brian Tanner

Independent Cost Analyst

**SCAF 2017 Cost Estimating
Challenge and Workshop
04 April 2017
The BAWA Centre, Bristol**

The aim of this workshop is to provide an interactive training session in cost estimating through the presentation of case studies that have been conducted by professional teams from academia, industry and consultants with the added benefit of top-level critique by senior figures in the profession. The programme will be instructive, entertaining and suitable for a wide interest audience (estimators as well as managers).

All new upmarket cars regardless of the brand have technical features to attract their potential customers. Technical features such as remote temperature control, automatic route memory, etc. are unique for one brand and not available on others. This third-party application provides access to top five application across the automotive platforms regardless of the brands. Provision should be made or should be considered in the development phase to tap into the autonomous driving market which will be the key focus for this company in the next five to ten years.

The task is to cost the development of a third-party application to be used on OS, Android and Windows platforms for major automotive platforms in the UK.

Each of the participating teams are allocated a 30 minute presentation time (including brief clarifications questions). A response from the review panel and a plenary discussion follows after the afternoon break.

Last year's challenge had seven teams participating. The challenge (2016) was to evaluate the effect from the new EU rules on vacuum cleaners that came into force on 1st September 2014 and would mean that "consumers would get better vacuum cleaners" and less energy would be wasted. A statement from the EU stated that it was not power that made a vacuum cleaner perform well. It was good to see similar but different approaches to the problem that was proposed (and this, in itself, was educational for all the attendees). For the Society it showed that the workshop had fully achieved its aims and objectives by providing a training session in cost estimating conducted by graduate professional estimating teams and retained the enthusiasm with a programme that was instructive, entertaining and enjoyed by all including the experienced costing practitioners, finance managers and project staff in addition to all the presenters. Our thanks to all the teams and their organisations for their support to this excellent lessons learned workshop.

The comments and reviews said it all – Make sure you attend in 2017

SCAF Management Committee Meetings 2017

Date	Venue	Focus
10 Jan 2017	QinetiQ, Bristol	Finalise SCAF 2017 Challenge
07 Mar 2017	QinetiQ, Bristol	Discuss Awards Dinner Nominations and annual SCAF Budget
16 May 2017	ATKINS, Aldershot	Annual Conference, final details for Awards Dinner, Committee nominations, subscription budget
11 Jul 2017	QinetiQ, Bristol	Final details Annual Conference & AGM information
03 Oct 2017	ATKINS, Aldershot	2018 Annual Programme and November workshop
07 Nov 2017	QinetiQ, Bristol	Ideas for SCAF Challenge and February workshop
05 Dec 2017	ATKINS, Aldershot	Finalise 2018 events programme and interim 2019 programme

The committee would welcome any suggestions on particular topics that can be developed for debating at future workshops or for round table/panel discussion. We would also welcome any comments on changes or otherwise you might like to see to the workshop structure and content.

Please forward your comments to editor@scaf.org.uk where they can be put on the agenda for committee discussion and action.

Please also remember that the committee works for the members and will do their utmost to address any issues raised to the benefit of the Society.

SCAF Corporate Membership

Are you a company that sends 5 or more staff to any of our workshops? There are discounts available for block bookings with further flexibility offered for Corporate Membership. Further details can be obtained from the SCAF Secretary, Neil Morrill email: ndmorrill@dstl.gov.uk or call 01980 955548



www.scaf.org.uk



Bridging relationships in cost estimating

For over 20 years the Society has sought to illuminate key issues in the analysis and forecasting of project costs—and to promote best practice within the cost forecasting community.

The Society provides a single point of contact for advice to those wishing to address key issues in the analysis and forecasting of costs and timescales of complex programmes.

Workshops and seminars are held at regular intervals throughout the year. A newsletter is published electronically 4 times a year.

Collaborative links with other societies has always been maintained and a library of relevant papers are available. A single annual payment at the Annual Conference entitles members to attend all the years' programme of SCAF events at no further cost. The Summer Reception is also provided free to SCAF members and their guests.

SCAF is committed to providing Continuing Professional Development (CPD) through the provision of its skills workshops and its support to Professional Development courses.

The Society is self-funded and a Not-for-Profit organisation that continues to provide its members with exceptional value for money.

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